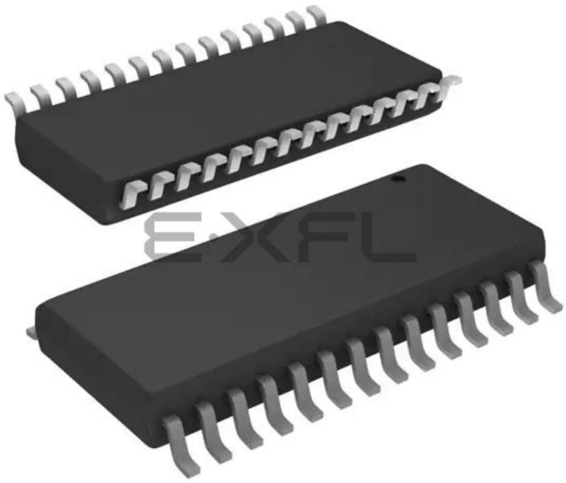

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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Active
Core Processor	PIC
Core Size	8-Bit
Speed	24MHz
Connectivity	SCI, UART/USART, USB
Peripherals	Brown-out Detect/Reset, POR, PWM, WDT
Number of I/O	22
Program Memory Size	14KB (8K x 14)
Program Memory Type	OTP
EEPROM Size	-
RAM Size	256 x 8
Voltage - Supply (Vcc/Vdd)	4.35V ~ 5.25V
Data Converters	A/D 5x8b
Oscillator Type	External
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	28-SOIC (0.295", 7.50mm Width)
Supplier Device Package	28-SOIC
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/pic16c745t-i-so

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An errata sheet may exist for current devices, describing minor operational differences (from the data sheet) and recommended workarounds. As device/documentation issues become known to us, we will publish an errata sheet. The errata will specify the revision of silicon and revision of document to which it applies.

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- Microchip's Worldwide Web site; http://www.microchip.com
- Your local Microchip sales office (see last page)
- The Microchip Corporate Literature Center; U.S. FAX: (480) 786-7277

When contacting a sales office or the literature center, please specify which device, revision of silicon and data sheet (include literature number) you are using.

Corrections to this Data Sheet

We constantly strive to improve the quality of all our products and documentation. We have spent a great deal of time to ensure that this document is correct. However, we realize that we may have missed a few things. If you find any information that is missing or appears in error, please:

- Fill out and mail in the reader response form in the back of this data sheet.
- E-mail us at webmaster@microchip.com.

We appreciate your assistance in making this a better document.

2.0 PIC16C745/765 DEVICE VARIETIES

A variety of frequency ranges and packaging options are available. Depending on application and production requirements, the proper device option can be selected using the information in the PIC16C745/765 Product Identification System section at the end of this data sheet. When placing orders, please use that page of the data sheet to specify the correct part number.

2.1 UV Erasable Devices

The UV erasable version, offered in windowed CERDIP packages, is optimal for prototype development and pilot programs. This version can be erased and reprogrammed to any of the supported oscillator modes.

Microchip's PICSTART® Plus and PRO MATE® II programmers both support programming of the PIC16C745/765.

2.2 One-Time-Programmable (OTP) Devices

The availability of OTP devices is especially useful for customers who need the flexibility for frequent code updates and small volume applications.

The OTP devices, packaged in plastic packages, permit the user to program them once. In addition to the program memory, the configuration bits must also be programmed.

2.3 Quick-Turnaround-Production (QTP) Devices

Microchip offers a QTP Programming Service for factory production orders. This service is made available for users who choose not to program a medium to high quantity of units and whose code patterns have stabilized. The devices are identical to the OTP devices but with all EPROM locations and configuration options already programmed by the factory. Certain code and prototype verification procedures apply before production shipments are available. Please contact your local Microchip Technology sales office for more details.

2.4 Serialized Quick-Turnaround Production (SQTP℠) Devices

Microchip offers a unique programming service where a few user-defined locations in each device are programmed with different serial numbers. The serial numbers may be random, pseudo-random or sequential.

Serial programming allows each device to have a unique number, which can serve as an entry-code, password or ID number.

NOTES:

FIGURE 4-2: DATA MEMORY MAP FOR PIC16C745/765

Bank 0	File Address	Bank 1	File Address	Bank 2	File Address	Bank 3	File Address
Indirect addr.(*)	00h	Indirect addr.(*)	80h	Indirect addr.(*)	100h	Indirect addr.(*)	180h
TMR0	01h	OPTION_REG	81h	TMR0	101h	OPTION_REG	181h
PCL	02h	PCL	82h	PCL	102h	PCL	182h
STATUS	03h	STATUS	83h	STATUS	103h	STATUS	183h
FSR	04h	FSR	84h	FSR	104h	FSR	184h
PORTA	05h	TRISA	85h		105h		185h
PORTB	06h	TRISB	86h	PORTB	106h	TRISB	186h
PORTC	07h	TRISC	87h		107h		187h
PORTD(2)	08h	TRISD(2)	88h		108h		188h
PORTE(2)	09h	TRISE(2)	89h		109h		189h
PCLATH	0Ah	PCLATH	8Ah	PCLATH	10Ah	PCLATH	18Ah
INTCON	0Bh	INTCON	8Bh	INTCON	10Bh	INTCON	18Bh
PIR1	0Ch	PIE1	8Ch		10Ch		18Ch
PIR2	0Dh	PIE2	8Dh		10Dh		18Dh
TMR1L	0Eh	PCON	8Eh		10Eh		18Eh
TMR1H	0Fh		8Fh		10Fh		18Fh
T1CON	10h		90h		110h	UIR	190h
TMR2	11h		91h		111h	UIE	191h
T2CON	12h	PR2	92h		112h	UEIR	192h
	13h		93h		113h	UEIE	193h
	14h		94h		114h	USTAT	194h
CCPR1L	15h		95h		115h	UCTRL	195h
CCPR1H	16h		96h		116h	UADDR	196h
CCP1CON	17h		97h		117h	USWSTAT(1)	197h
RCSTA	18h	TXSTA	98h		118h	UEP0	198h
TXREG	19h	SPBRG	99h		119h	UEP1	199h
RCREG	1Ah		9Ah		11Ah	UEP2	19Ah
CCPR2L	1Bh		9Bh		11Bh		19Bh(1)
CCPR2H	1Ch		9Ch		11Ch		19Ch(1)
CCP2CON	1Dh		9Dh		11Dh		19Dh(1)
ADRES	1Eh		9Eh		11Eh		19Eh(1)
ADCON0	1Fh	ADCON1	9Fh		11Fh		19Fh(1)
General Purpose Register 96 Bytes	20h	General Purpose Register 80 Bytes	A0h	General Purpose Register 80 Bytes	120h	USB Dual Port Memory 64 Bytes	1A0h
							1DFh
							1E0h
			EFh		16Fh		1EFh
		accesses 70h-7Fh	F0h	accesses 70h-7Fh	170h	accesses 70h-7Fh	1F0h
	7Fh		FFh		17Fh		1FFh

Unimplemented data memory locations, read as '0'.
*Not a physical register.
Note 1: Reserved registers may contain USB state information.
2: Parallel slave ports (PORTD and PORTE) not implemented on PIC16C745; always maintain these bits clear.

4.2.2.5 PIR1 REGISTER

This register contains the individual flag bits for the peripheral interrupts.

Note:	Interrupt flag bits are set when an interrupt condition occurs, regardless of the state of its corresponding enable bit or the global enable bit, GIE (INTCON<7>). User software should ensure the appropriate interrupt flag bits are clear prior to enabling an interrupt.

REGISTER 4-5: PERIPHERAL INTERRUPT REGISTER1 (PIR1: 0Ch)

R/W-0	R/W-0	R-0	R-0	R/W-0	R/W-0	R/W-0	R/W-0
PSPIF[(1)]	ADIF	RCIF	TXIF	USBIF	CCP1IF	TMR2IF	TMR1IF
bit7							bit0

R = Readable bit
W = Writable bit
U = Unimplemented bit, read as ‘0’
-n = Value at POR reset

bit 7: **PSPIF[(1)]:** Parallel Slave Port Read/Write Interrupt Flag bit
1 = A read or a write operation has taken place (must be cleared in software)
0 = No read or write has occurred

bit 6: **ADIF**: A/D Converter Interrupt Flag bit
1 = An A/D conversion completed (must be cleared in software)
0 = The A/D conversion is not complete

bit 5: **RCIF**: USART Receive Interrupt Flag bit
1 = The USART receive buffer is full (clear by reading RCREG)
0 = The USART receive buffer is empty

bit 4: **TXIF**: USART Transmit Interrupt Flag bit
1 = The USART transmit buffer is empty (clear by writing to TXREG)
0 = The USART transmit buffer is full

bit 3: **USBIF**: Universal Serial Bus (USB) Interrupt Flag
1 = A USB interrupt condition has occurred. The specific cause can be found by examining the contents of the UIR and UIE registers.
0 = No USB interrupt conditions that are enabled have occurred.

bit 2: **CCP1IF**: CCP1 Interrupt Flag bit

Capture Mode
1 = A TMR1 register capture occurred (must be cleared in software)
0 = No TMR1 register capture occurred

Compare Mode
1 = A TMR1 register compare match occurred (must be cleared in software)
0 = No TMR1 register compare match occurred

PWM Mode
Unused in this mode

bit 1: **TMR2IF**: TMR2 to PR2 Match Interrupt Flag bit
1 = TMR2 to PR2 match occurred (must be cleared in software)
0 = No TMR2 to PR2 match occurred

bit 0: **TMR1IF**: TMR1 Overflow Interrupt Flag bit
1 = TMR1 register overflowed (must be cleared in software)
0 = TMR1 register did not overflow

Note 1: Parallel slave ports not implemented on the PIC16C745; always maintain this bit clear.